

Two Pseudoliiodine genera *Dermatohomoeus* Hlisnikovský and *Pseudcolenis* Reitter (Coleoptera: Leiodidae: Leiodinae) in Korea, with a description of *Pseudcolenis hoshinai* new species

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Abstract

A taxonomic study of two Korean pseudoliiodine genera, *Dermatohomoeus* Hlisnikovský and *Pseudcolenis* Reitter, is presented. Two genera and three species are recognized. One new species (*Pseudcolenis hoshinai* Park & Ahn) is described. *Dermatohomoeus terrenus* (Hisamatsu) is reported for the first time in the Korean peninsula. *Pseudcolenis hilleri* Reitter is new to South Korea. A key for the genera and species, description of the new species, and illustrations of diagnostic characters are presented.

Key words: Taxonomy, Coleoptera, Leiodidae, Leiodinae, Pseudoliiodini, *Dermatohomoeus*, *Pseudcolenis*, new species, Korea

Introduction

The genera *Dermatohomoeus* Hlisnikovský, 1963 and *Pseudcolenis* Reitter, 1885 belong to the tribe Pseudoliiodini Portevin, 1926. The genus *Dermatohomoeus* containing thirty two species has been recorded from central Africa, the Oriental region, Melanesia, Australia and Japan (Hlisnikovský 1963, 1964a, 1965, 1966, 1972; Daffner 1986, 1988b, 1990; Angelini & Švec 1998; Newton 1998; Hoshina 1999). In East Asia, three species are distributed in Japan (Hisamatsu 1985a, 1985b; Daffner 1988b; Hoshina 1999). The genus *Pseudcolenis* consists of twenty five species from mainly the Oriental region, China, Japan, Korea and Russia (Reitter 1885; Portevin 1905, 1914, 1927; Hatch 1929; Daffner 1988a; Angelini & Švec 1995, 2000; Newton 1998). In East Asia, seven species are distributed in China (Hlisnikovský 1964b; Daffner 1988a; Angelini & Švec 1995, 2000), three in Japan (Reitter 1885; Portevin 1905, 1914, 1927; Daffner 1988a; Angelini & Švec 1995, 2000) and two in the Far East of Russia (Angelini & Švec 2000). Daffner (1988a) reported *Pseudcolenis hilleri* Reitter, 1885 for the first time in Korea.

In this paper we report two genera and three species from Korea. *Pseudcolenis hoshinai* is described as a new species and *Dermatohomoeus terrenus* (Hisamatsu, 1985a) is the first record of the genus and species in Korea. *Pseudcolenis hilleri* reported by Daffner (1988a) from North Korea is added to South Korean fauna. Keys to Korean genera of Pseudoliiodini and species of *Dermatohomoeus* and *Pseudcolenis*, a description of the new species and illustrations of diagnostic characters are given. Diagnoses of the two genera are based on our examination of East Asian species and published descriptions of other species. The diagnoses aim to apply to all known species of the genera. The terminology follows Wheeler (1979) for aedeagus and Betz *et al.* (2003) for mouthparts. Specimens were collected by Flight Intercept Traps (FIT), sifting leaf litter, from

mushrooms or rotting logs, and are deposited in Chungnam National University Insect Collection, Daejeon, Korea (CNUIC).

Taxonomic treatment

Key to Korean genera and species of Pseudoliodini

- 1 Head densely punctate; eyes small, weakly projected (Fig. 1); antennomere 11 wider than 10 (Fig. 3); pronotum without transverse strigulae on disk; elytra finely punctate, with strong sparse strigulae on disk; meso- and metatibia with few strong spines (Figs. 7–8) (*Dermatohomoeus* Hlisnikovský).....
..... *Dermatohomoeus terrenus* (Hisamatsu)
- Head sparsely punctate; eyes large, strongly projected (Fig. 2); antennomere 11 narrower or as wide as 10 (Figs. 4–5); pronotum with weak dense transverse strigulae on disk; elytra weakly punctate, with weak dense transverse strigulae on disk; meso- and metatibia with many strong spines (Figs. 10–11) (*Pseudocolenis* Portevin) 2
- 2 Antennomere 6 wider than long, 3 as long as 2 (Fig. 5); median lobe moderately narrowed apically in ventral aspect, central piece of internal sac armature long in ventral aspect and slightly curved ventrally in lateral aspect (Figs. 13, 15) *Pseudocolenis hoshinai* Park & Ahn, **new species**
- Antennomere 6 longer than wide, 3 about 1.2 times longer than 2 (Fig. 4); median lobe sharply narrowed at near apex in ventral aspect, central piece of internal sac armature relatively short in ventral aspect and sharply curved ventrally in lateral aspect (Figs. 12, 14).....*Pseudocolenis hilleri* Reitter

Genus *Dermatohomoeus* Hlisnikovský, 1963

See Newton (1998) and Hoshina (1999) for synonymy and references.

Type species: *Dermatohomoeus guineensis* Hlisnikovský, 1963.

Diagnosis. Body very convex, glabrous, almost concolorous, brown to dark brown. Head not striolate, finely and densely punctate. Antenna (Fig. 3) slender; antennomere 8 as long as or shorter than half of 9; 7 and 9–11 pubescent with long or short setae and 1–6 and 8 sparser. Mandible asymmetrical, with molar lobe bearing well developed grinding surface. Clypeal line (Fig. 1) fine, apical margin of clypeus not emarginate. Labrum (Fig. 1) with slight apical emargination. Eyes (Fig. 1) oval, relatively small, slightly narrowed behind eyes. Pronotum not transversely striolate, weakly microreticulate or not, finely and densely punctate. Elytra strongly and densely or sparsely striolate, weakly microreticulate, finely and densely punctate. Mesosternum with medial carina; mesocoxal cavity relatively close to mesepimeron. Tarsal formula 5-4-4 in both sexes, meso- and metatarsomere 1 distinctly longer than 2. Aedeagus elongate, ventral piece usually projected and longer than median lobe. Spermatheca (Fig. 16) distinct.

Dermatohomoeus terrenus (Hisamatsu, 1985a)

Figs. 1, 3, 6–8, 16

Colenis terrena Hisamatsu, 1985a: 7; Hisamatsu, 1985b: 234.

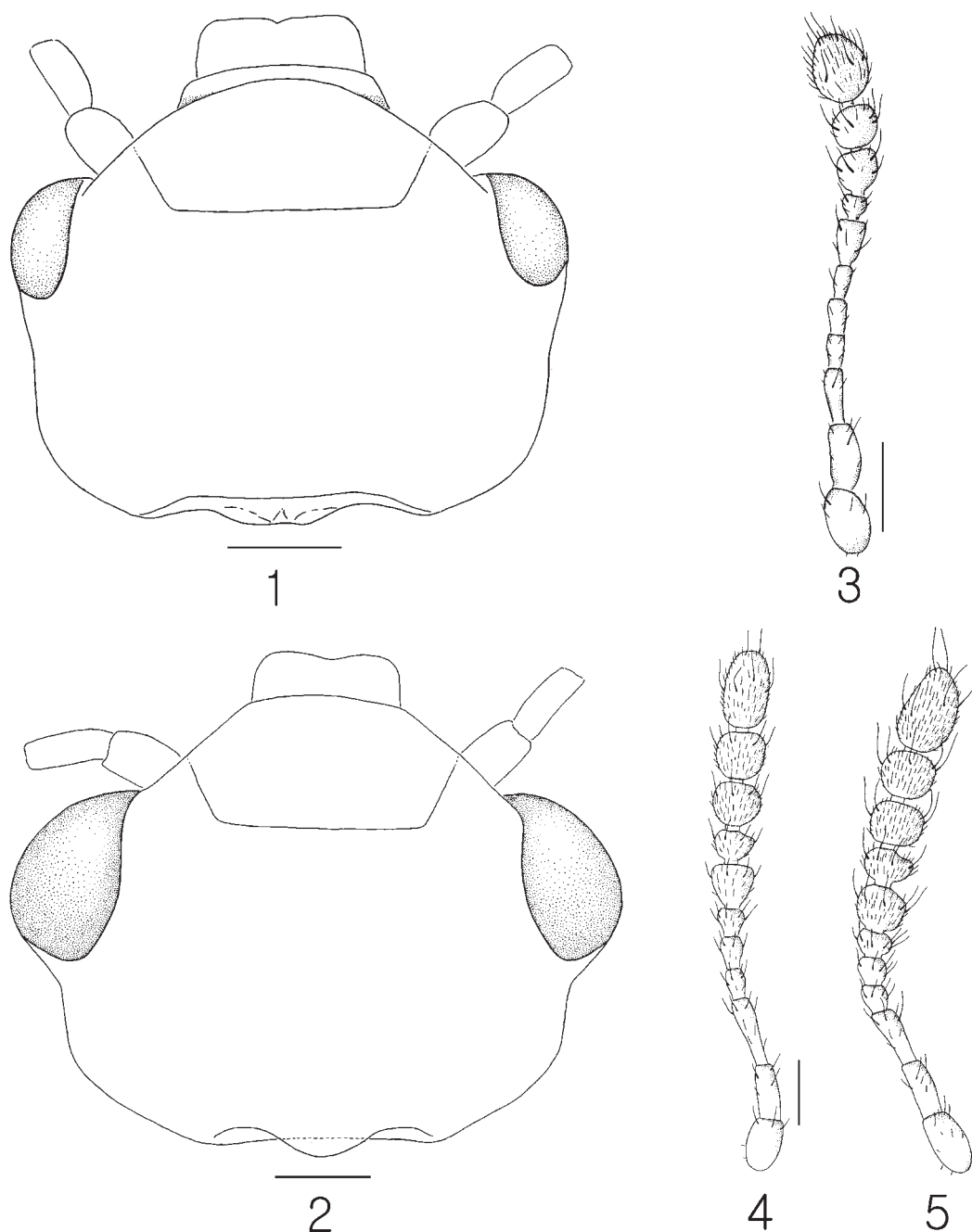
Dermatohomoeus terrenus: Angelini & Švec, 1998: 5; Hoshina, 1999: 414.

Materials examined. SOUTH KOREA: Jeonnam Prov.: 1 female, Piagol, Mt. Jiri, Guryeo-gun, 31 V 2002,

J.-S. Park and J.-H. Choi, sifting; 2 females, N35°15'32.22" E127°34'56.84", Mt. Sanghwangbong, Wando-gun, 1 VII 2003, S.-J. Park, S.-M. Choi and D.-H. Lee, sifting; **Jeju Prov.:** 16 females, Dongbaekdongsan, Seonheul-ri, Jocheon-eup, Bukjeju-gun, 22 V 2006, S.-I. Lee and Y.-H. Kim, sifting; 26 females, Donnaeko, Sanghyo-dong, Seogwipo City, 22 V 2006, S.-J. Park and S.-I. Lee, sifting; 22 females, same data as former except for 'T.-K. Kim and H.-W. Kim, sifting'.

Distribution. Korea and Japan.

Remarks. *Dermatohomoeus terrenus* is recorded for the first time in Korea. This species is easily collected and widely distributed throughout Japan, except Hokkaido. Hoshina (1999) stated that they may have parthenogenetic reproduction because all specimens examined by him were females. All Korean specimens examined by us were females too.



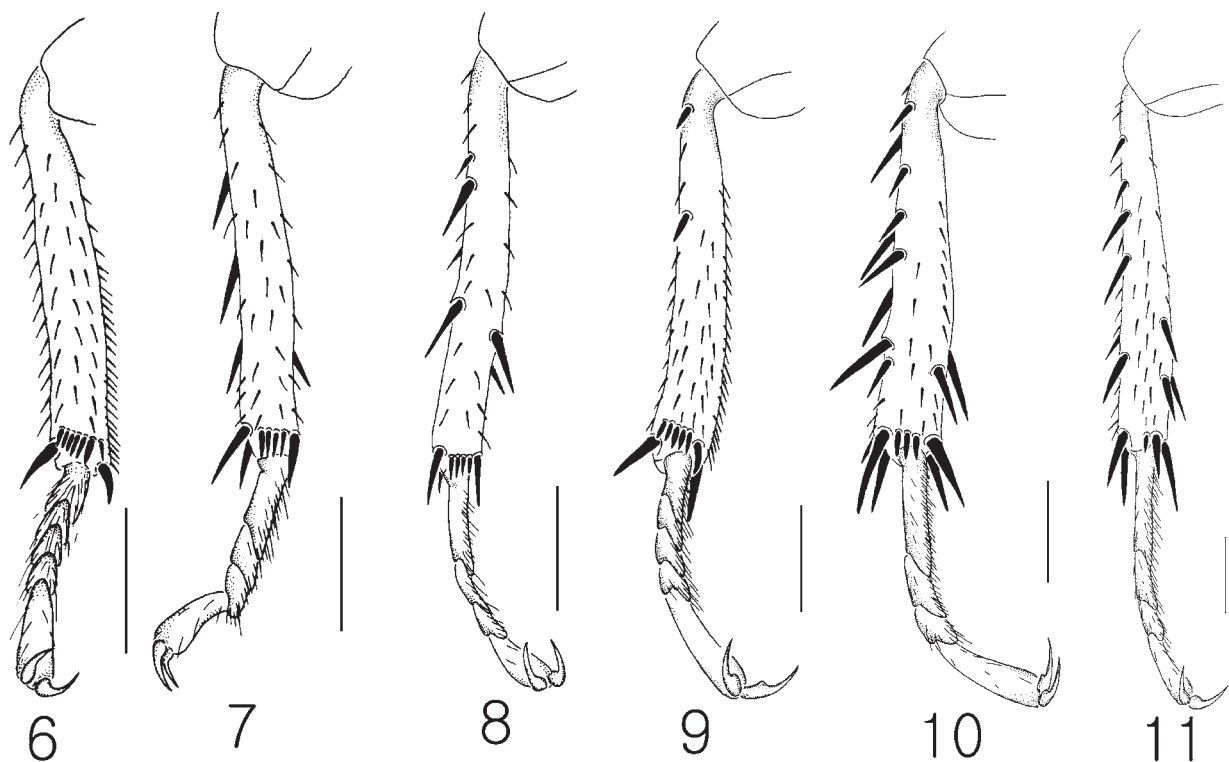
FIGURES 1–5. Head (1–2) and antenna (3–5), dorsal aspect. 1, 3: *Dermatohomoeus terrenus* (Hisamatsu); 2, 5: *Pseudocolenis hoshinai* Park & Ahn, new species; 4: *P. hilleri* Reitter. Scale bars: 0.1 mm.

Genus *Pseudcolenis* Reitter, 1885

See Daffner (1988a) and Newton (1998) for synonymy and references.

Type species: *Pseudcolenis hilleri* Reitter, 1885 (monotypy).

Diagnosis. Body convex, glabrous, almost concolorous, brown to dark brown. Head weakly but densely striolate, with some fine sparse punctures. Antenna (Figs. 4–5) relatively slender; antennomere 8 longer than half of 9; 7 and 9–11 pubescent with long or short setae and 1–6 and 8 sparser. Mandible asymmetrical, with molar lobe bearing well developed grinding surface. Clypeal line (Fig. 2) fine, apical margin of clypeus not emarginate. Labrum (Fig. 2) with slight apical emargination. Eyes (Fig. 2) oval and projected, sharply narrowed behind eyes. Pronotum weakly, densely and transversely striolate, weakly punctate. Elytra with weak and dense, or strong and sparse transverse strigulae, weakly or strongly punctate, rows of punctures present or not. Mesosternum with medial carina; mesocoxal cavity distant from mesepimeron. Tarsal formula 5-4-4 in both sexes, protarsomeres 1–4 more dilated in male, meso- and metatarsomere 1 (Figs. 10–11) distinctly longer than 2. Aedeagus (Figs. 12–15) elongate, usually slender. Spermatheca shape (Figs. 17–18) varies.



FIGURES 6–11. Tibia and tarsus of *Dermatohomoeus terrenus* (Hisamatsu) (6–8) and *Pseudcolenis hoshinai* Park & Ahn, new species (9–11). 6, 9: protibia and protarsus; 7, 10: mesotibia and mesotarsus; 8, 11: metatibia and metatarsus. Scale bars: 0.1 mm.

Pseudcolenis hilleri Reitter, 1885

Figs. 4, 12, 14, 17

Pseudcolenis hilleri Reitter, 1885: 92; Daffner, 1988a: 169.

Pseudocolenis strigosula Portevin, 1905: 421 [synonymized by Daffner (1988a)].

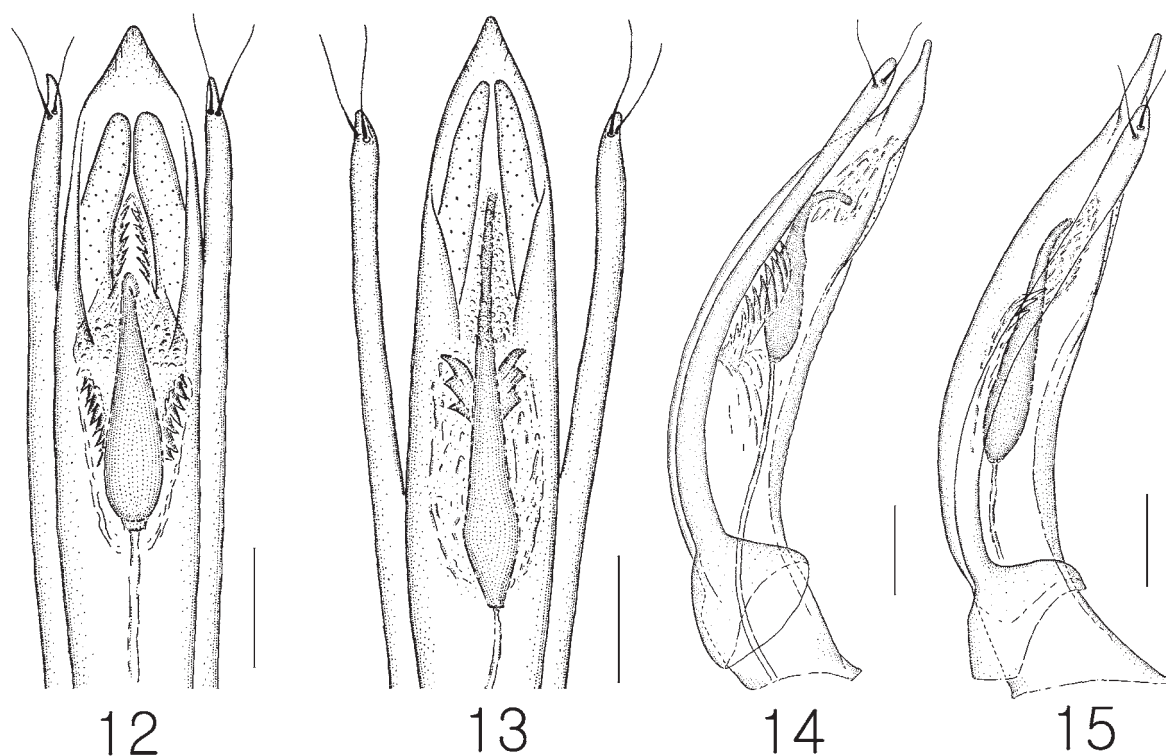
Pseudoliodes strigosula: Portevin, 1927: 80.

Pseudoliodes chinensis Hlisnikovský, 1964b: 147 [synonymized by Daffner (1988a)].

Materials examined. SOUTH KOREA: Gangwon Prov.: 1 male, Mt. Hwaaksan, Hwacheon-gun, 11–12 IX 1998, K.-L. You, H.-J. Lim and K.-J. Ahn, sifting; 1 male, Sangwonsa, Mt. Odaesan, Dongsan-ri, Jinbunmyeon, Pyeongchang-gun, 4 VI–22 VI 2001, K.-J. Ahn, S.-J. Park, M.-S. Kim and M.-J. Jeon, FIT; 10 males, Mt. Sambangsan, Cheondong-ri, Pyeongchang-gun, 13 VII–15 VIII 2001, K.-J. Ahn, S.-J. Park and C.-W. Shin, FIT in *Pinus* forest; **Chungnam Prov.:** 11 males, 19 females, Sinwonsa, Mt. Gyeryongsan, Hwaeun-ri, Gyeryong-myeon, Gongju City, 23 VII 1998, M.-H. Kim, *ex* mushroom; 8 males, Mt. Sikjongsan, Daejeon City, 12 VII 2000, U.-S. Hwang, *ex* mushroom; **Gyeongbuk Prov.:** 2 males, 1 female, Mt. Gabjongsan, Jichon-dong, Sangju City, 1–2 VII 2000, Y.-B. Cho, bait trap; 3 males, 2 females, same data as former except for, 2–3 VII 2000; 1 male, 4 females, Mt. Sanjibong, Sinseong-ri, Andeok-myeon, Chongsong-gun, 10–11 VII 2000, Y.-B. Cho, bait trap.

Distribution. Korea (Daffner 1988a), China (Fujian: Hlisnikovský 1964b), Japan (Reitter 1885) and Russia (Far East: Angelini & Švec 2000).

Remarks. The species is very common in South Korea. Specimens were mostly collected by Flight Intercept Traps and from various kinds of mushrooms; Agaricaceae spp. (*Agaricus* sp.), Amanitaceae spp. (*Amanita virgineoides* and sp.), Boletaceae spp. (*Boletus* sp. and *Suillus bovinus*), Cortinariaceae spp., Paxillaceae spp., Russulaceae spp. (*Lactarius volemus* and *Russula* sp.), Tricholomataceae spp. (*Collybia* sp.), Meruliaceae spp., Ramariaceae spp., Polyporaceae spp., etc. Some have been collected in baited traps and, rarely, by sifting forest leaf litter.



FIGURES 12–15. Aedeagus of *Pseudocolenis hilleri* Reitter (12, 14) and *P. hoshinai* new Park & Ahn, new species (13, 15). 12–13: ventral aspect; 14–15: lateral aspect. Scale bars: 0.1 mm.

***Pseudocolenis hoshinai* Park & Ahn, new species**

Figs. 2, 5, 9–11, 13, 15, 18

Type series. Holotype, male, labeled as follows: “KOREA: Jeonbuk Prov., Imsil-gun, Samkye-myeon, Sesim-ri, Gameunsan, 15 IX 2002, M.-H. Kim, *ex* mushroom; Holotype, *Pseudocolenis hoshinai* Park and

Ahn, Desig. S.-J. Park and K.-J. Ahn 2005". Deposited in CNUIC, Daejeon. Paratypes, 24; 14 males, 10 females: same data as holotype. Deposited in CNUIC, Daejeon.

Description. Body length about 1.8–2.0 mm (holotype: 1.9 mm). Body convex, glabrous, almost concolorous, brown to dark brown. Antennomeres 1–6 and 11 light brown, 7–10 darker. Body about 1.6 times longer than wide, widest at about basal one fourth of elytra.

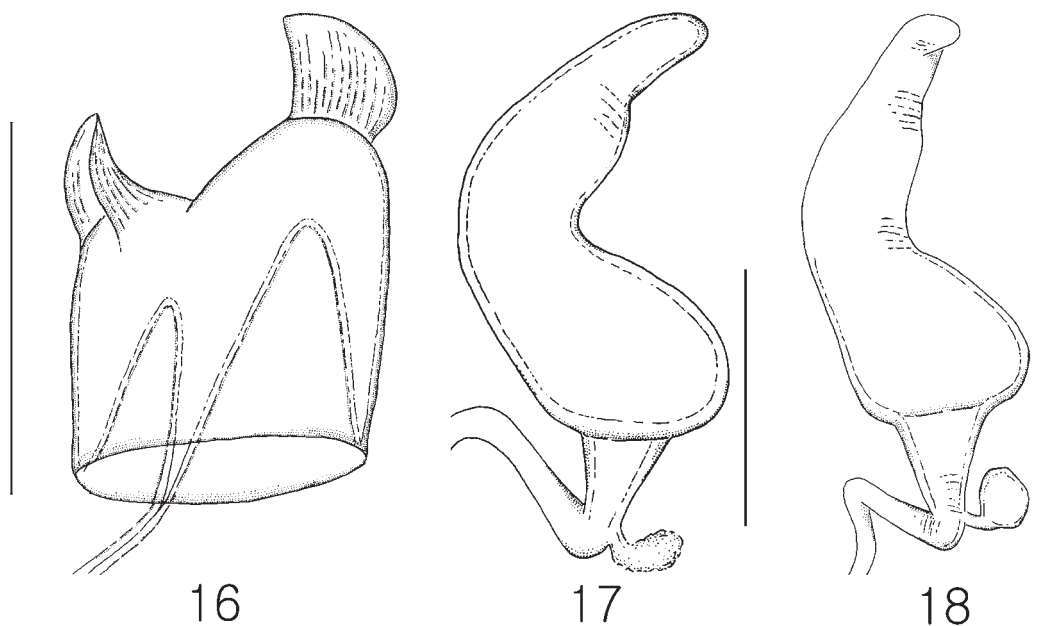
Head (Fig. 2) about 1.3 times wider than long, with some fine scattered punctures, very weak dense strigulae present, widest at eyes, sharply narrowed behind eyes. Eyes oval, strongly projected. Mandible asymmetrical, without subapical tooth; prostheca and molar lobe bearing grinding surface present; retinaculum absent. Clypeal line clear. Apical margin of labrum shallowly emarginate, with long and short setae. Antenna (Fig. 5) slender, with antennomeres 7–11 pubescent with long or short setae, others sparser, 3 almost equal to 2 in length, 8 longer than 6.

Pronotum about 1.9 times wider than long, widest at base, weakly punctate, with very weak transverse strigulae as dense as those of head. Elytra about 1.1 times longer than wide, as weakly punctate as pronotum, with transverse strigulae finer and sparser than those of head or pronotum, without rows of punctures, with sutural stria extending to near scutellum. Mesosternum impunctate, finely microreticulate, with a blunt and incomplete medial carina. Mesocoxal cavity distantly separated from mesepimeron; metasternum impunctate, without setae except in median region with some long and short setae, not microreticulate medially, finely microreticulate laterally. Legs (Figs. 9–11) slender, tarsal formula 5-4-4 in both sexes; protibia with short or long spines along outer and apical margins; male protarsi little more dilated than those of female, meso- and metatarsomere 1 longer than 2–3 combined. Hind wings normal.

Aedeagus (Figs. 13, 15) slender and elongated; median lobe moderately narrowed and pointed apically in ventral aspect, slightly curved ventrally in lateral aspect, apex moderately pointed in lateral aspect, ventral piece divided, with small projections in ventral and lateral aspects, internal sac complex, apex of central piece of internal sac armature slightly curved ventrally in lateral aspect; parameres (Figs. 13, 15) slender, reaching near apex of median lobe, with two long and flexible setae at apex in ventral and lateral aspect.

Spermatheca (Fig. 18) with spermathecal gland, slightly swollen at base.

Distribution. Korea.



FIGURES 16–18. Spermatheca, lateral aspect. 16: *Dermatohomoeus terrenus* (Hisamatsu); 17: *Pseudocolenis hilleri* Reitter; 18: *P. hoshinai* Park & Ahn, new species. Scale bars: 0.1 mm.

Comparative remarks. *Pseudocolenis hoshinai* is very similar to *P. hilleri* in body shape and structure of the aedeagus. However, the new species can be distinguished from *P. hilleri* by having antennomere 6 wider than long, and the central piece of the internal sac armature long and in lateral aspect slightly curved ventrally at apex. In contrast, in *P. hilleri* antennomere 6 is longer than wide, and the central piece of the internal sac armature is relatively short and in lateral aspect strongly curved ventrally at apex. The new species is also similar to *P. flavicollis* Daffner, 1988a from northern India and *P. picea* (Hisamatsu, 1964) from Japan in body size and structures of the aedeagus. However, *P. hoshinai* differs from *P. flavicollis* in having round-oval body shape (oval in *P. flavicollis*). Further, in ventral aspect the apex of the median lobe of *P. flavicollis* is more sharply pointed than that of *P. hoshinai*. *Pseudocolenis hoshinai* differs from *P. picea* in having very weak transverse strigulae on elytra, while elytra of *P. picea* have clear transverse strigulae.

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References

- Angelini, F. & Švec, Z. (1995) New species and records of Leiodinae from China (Coleoptera: Leiodidae). *Linzer Biologische Beiträge*, 27(2), 507–523.
- Angelini, F. & Švec, Z. (1998) Two new species of Leiodinae from India and Vietnam with taxonomic and distributional notes (Coleoptera: Leiodidae). *Acta Societatis Zoologicae Bohemicae*, 62, 1–5.
- Angelini, F. & Švec, Z. (2000) New species of the genera *Cyrtusa*, *Pseudocolenis*, *Cyrtoplastus* and *Agathidium* (Coleoptera: Leiodidae: Leiodinae) from China. *Acta Societatis Zoologicae Bohemicae*, 64, 119–141.
- Betz, O., Thayer, M.K. & Newton, A.F. (2003) Comparative morphology and evolutionary pathways of the mouthparts in spore-feeding Staphylinidae (Coleoptera). *Acta Zoologica (Stockholm)*, 84, 179–238.
- Daffner, H. (1986) Die Arten der Gattung *Dermatohomoeus* Hlisenkovský, 1963, von der melanesischen Inseln und Australien (Coleoptera: Leiodidae). *Entomofauna*, 7, 129–150.
- Daffner, H. (1988a) Monographische Bearbeitung der Gattung *Pseudocolenis* Reitter, 1884 (Coleoptera: Leiodidae: Pseudoliodini). *Revue Suisse de Zoologie*, 95, 151–179.
- Daffner, H. (1988b) Die Arten der Gattung *Dermatohomoeus* Hlisenkovský, 1963, aus Asien und Afrika (Coleoptera: Leiodidae: Pseudoliodini). *Revue Suisse de Zoologie*, 95, 791–815.
- Daffner, H. (1990) *Dermatohomoeus alesianus* new species, aus Nepal (Coleoptera: Leiodidae: Pseudoliodini). *Acta Coleopterologica*, 5, 47–52.
- Hatch, M. H. (1929) Leiodidae, Clambidae. In: Schenkling, S. (Ed.) *Coleopterorum Catalogus, Pars 105*. W. Junk, Berlin, pp. 1–100.
- Hisamatsu, S. (1964) Four new species of Coleoptera from Japan. *Transactions of the Shikoku Entomological Society*, 8, 51–58.
- Hisamatsu, S. (1985a) Notes on some Japanese Coleoptera, I. *Transactions of the Shikoku Entomological Society*, 17, 5–13.
- Hisamatsu, S. (1985b) Leiodidae. In: Uéno, S. et al. (Eds.) *The Coleoptera of Japan in Color. Vol. II*. Hoikusha, Osaka, pp. 233–237.
- Hlisenkovský, J. (1963) Neue Leiodidae (Coleoptera) aus Neu-Guinea I. *Annales Historico-Naturales Musei Nationalis Hungarici (Pars Zoologica)*, 55, 301–311.
- Hlisenkovský, J. (1964a) Neue Leiodidae (Coleoptera) aus Neu-Guinea II. *Annales Historico-Naturales Musei Nationalis Hungarici (Pars Zoologica)*, 56, 327–330.

- Hlisnikovský, J. (1964b) Die Gattung *Pseudoliodes* Port. (Coleoptera, Liodidae). *Reichenbachia*, 3(11), 145–149.
- Hlisnikovský, J. (1965) Neue Arten der Gattung *Dermatohomoeus* Hliss. aus Borneo (Coleoptera, Liodidae). *Reichenbachia*, 5(19), 177–180.
- Hlisnikovský, J. (1966) Die Liodidae der Noona-Dan-Expedition 1961/1962 nach dem Bismarck-Archipel und den Salomon-Inseln. *Reichenbachia*, 8(1), 1–10.
- Hlisnikovský, J. (1972) Beitrag zur Kenntnis der Liodidae (Coleoptera) von Ceylon. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft*, 45, 131–149.
- Hoshina, H. (1999) A taxonomic study of the genera *Dermatohomoeus* and *Colenis* (Coleoptera: Leiodidae) from Japan. *Entomological Science*, 2(3), 413–423.
- Newton, A.F., Jr. (1998) Phylogenetic problems, current classification and generic catalog of world Leiodidae (including Cholevidae). *Museo Regionale di Scienze Naturali, Torino*, 1998, 41–178.
- Portevin, G. (1905) Troisième note sur les Silphides du Muséum. *Bulletin du Muséum National d'Histoire Naturelle, Paris*, 1905, 418–427.
- Portevin, G. (1914) Révision des Silphides, Liodides et Clambides du Japon. *Annales de la Société Entomologique du Belgique*, 58, 212–236.
- Portevin, G. (1926) Les Liodidae de l'Inde. *Encyclopédie Entomologique (B), Coleoptera*, 1, 75–83.
- Portevin, G. (1927) Les Liodidae du Japon. *Encyclopédie Entomologique (B), Coleoptera*, 2, 73–94.
- Reitter, E. (1885) Bestimmungs-Tabellen der Europäischen Coleopteren, XII. Necrophaga (Platypsyllidae, Leptinidae, Silphidae, Anisotomidae und Clambidae). *Verhandlungen des Naturforschenden Vereines, Brünn*, 23[1884], 3–122.
- Wheeler, Q.D. (1979) Slime mold beetles of the genus *Anisotoma* (Leiodidae): classification and evolution. *Systematic Entomology*, 4, 251–309.